

95% of the time. These sensitivities should be adequate to estimate any significant amount of thorium present in the urine.

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Report on Recommended Specifications for Microchemical Apparatus Volumetric Glassware. Flasks, Pipets, and Centrifuge Tubes

Committee on Microchemical Apparatus, Division of Analytical Chemistry,
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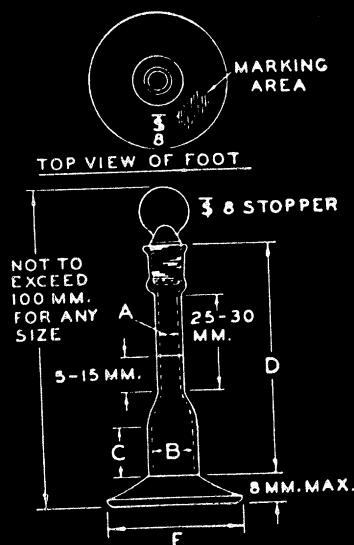
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IN PREVIOUS reports (2, 3) of the Committee on Microchemical Apparatus, recommended specifications were published for pieces of apparatus that were either the most widely used for the work in question or else an improvement over such apparatus according to tests made by the members of the committee or cooperating chemists. In this report, specifications are

Figure 1. Microvolumetric flask

Capacity, Ml.	A, Inside Diameter, Mm.	B, Inside Diameter, Mm.	C (Approx.), Mm.	D (Maximum), Mm.	E (Maximum), Mm.	F, Tolerance, Ml.
1	4.2-4.6	8.0-8.5	10	70	37	±0.010
2	5.0-5.4	10.5-11.0	13	70	39	±0.015
3	5.0-5.4	13.25-13.75	14	72	39	±0.015
	6.2-6.6	13.75-14.25	18	75	39	±0.020
	6.2-6.6	15.5-16.0	18	75	39	±0.020

To be marked "T.C. (capacity) 20° C." 1-ml. size to weigh less than 19 grams empty (stopper included). Shape of bases may be either round or hexagonal. Dimensions given in column E are maximum permitted for distance between parallel sides of hexagonal bases and are maximum diameters of round bases.



recommended for volumetric flasks (Figure 1), pipets to be used with the flasks (Figure 2), and centrifuge tubes (Figures 3 to 6). The volumetric flasks are of a new design which combines convenience in use with accuracy. A wide base affords greater stability against upset. In the case of the 1-ml. size, the diameter of the base is small enough to permit placement on the microchemical balance pan and the weight is restricted to a maximum of 19 grams when empty.

To increase the usefulness of these flasks, special measuring pipets have been designed. The long narrow delivery stems of the pipets reach to the bottom of the flasks, permitting almost complete withdrawal of the contents. Tests by members of the committee show that all but a few hundredths of a milliliter can be withdrawn.

Four types of centrifuge tubes are recommended: with conical bottom, plain (Figure 3); with conical bottom, stoppered (Figure 4); with cylindrical bottom, plain (Figure 5); and with cylindrical bottom, stoppered (Figure 6).

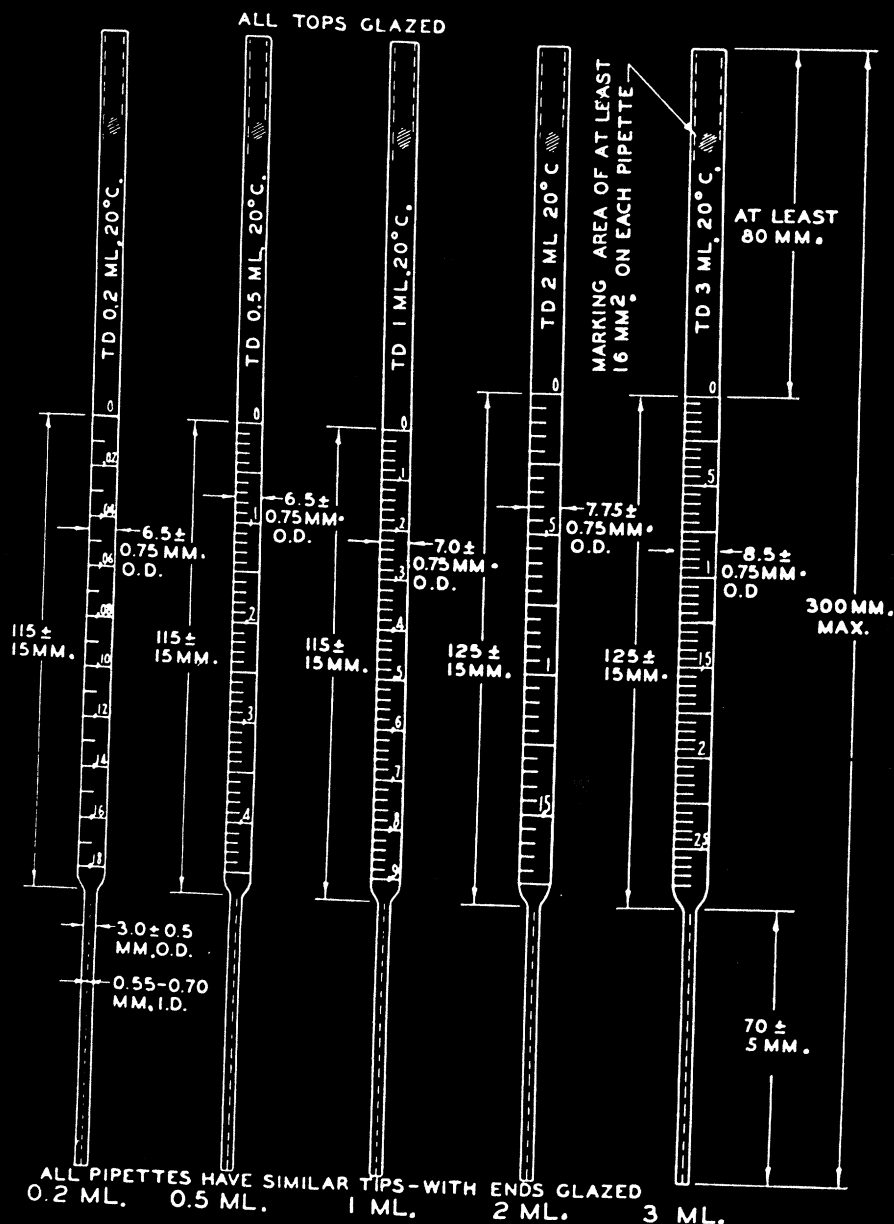


Figure 2. Micropipet with cylindrical tip

Capacity, Ml.	Subdivision, Ml.	Interval Graduated, Ml.	Lining		Number at 0 and each ml.	Tolerance, Ml.
			Ring at each ml.	1/2 ring at each ml.		
0.2	0.01	0 to 0.18	0.02	0.01	0.02	±0.005
0.5	0.01	0 to 0.45	0.05	0.01	0.1	±0.01
1	0.02	0 to 0.90	0.1	0.02	0.1	±0.02
2	0.05	0 to 1.75	0.25	0.05	0.5	±0.04
3	0.05	0 to 2.70	0.25	0.05	0.5	±0.06

No graduations to appear in tapered portion
Tip may be tapered at junction with body, but outside diameter at this point may not exceed 4.5 mm.
Tip outlet to be glazed, with least possible constriction
Calibrated to deliver at 20° C. touching off last drop

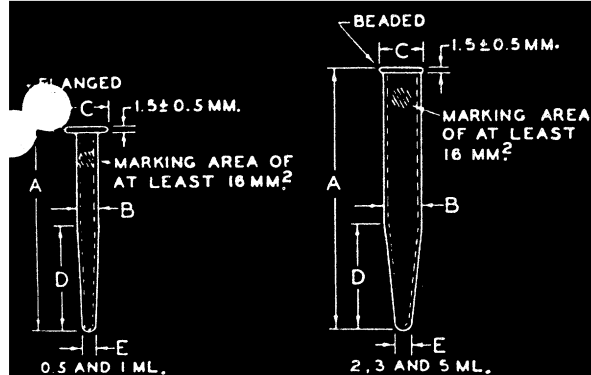


Figure 3. Microcentrifuge tube with conical bottom, plain

Nominal Capacity, Ml.	A, Over-All Height, Mm.	B, Outside Diameter Cylindrical Portion, Mm.	C, Outside Diameter Top Finish, Mm.	D, Length of Taper, at Bottom, Mm.	E, Outside Diameter at Bottom, Mm.
0.5	58 ± 2	6.0 ± 0.25	13 ± 1.0	30 ± 2	3.5 ± 0.5
1	61 ± 2	8.25 ± 0.25	13 ± 1.0	30 ± 2	3.5 ± 0.5
2	66 ± 2	10.75 ± 0.25*	13.5 ± 1.0	30 ± 2	4.0 ± 0.5
3	74 ± 2	10.75 ± 0.25*	13.5 ± 1.0	30 ± 2	4.0 ± 0.5
5	101 ± 2	13.0 ± 0.50	16.25 ± 0.75	40 ± 2	4.0 ± 0.5

Wall thickness of all sizes to be approximately 1 mm.

* The outside diameter of 2 and 3 ml. must not exceed 11.0 mm.; otherwise tubes will not fit into centrifuge shields.

Bottoms to be rounded

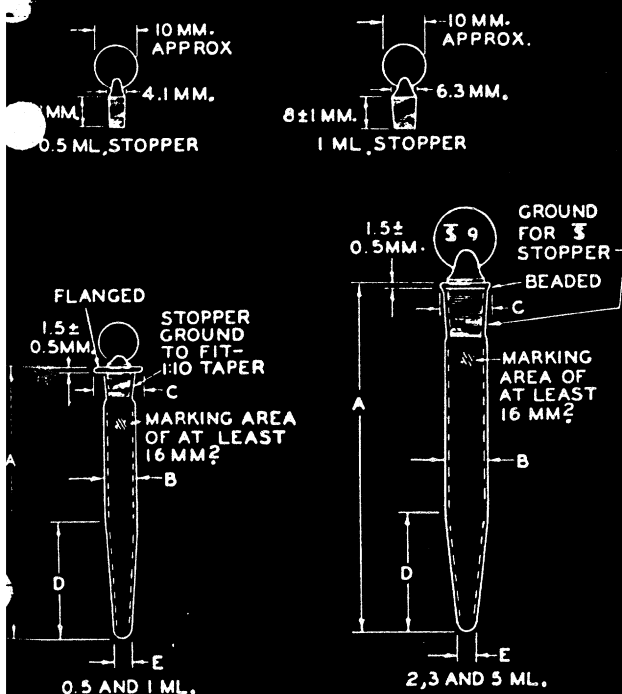


Figure 4. Microcentrifuge tube with conical bottom, stoppered

Nominal Capacity, Ml.	A, Over-All Height, Mm.	B, Outside Diameter Cylindrical Portion, Mm.	C, Outside Diameter Top Finish, Mm.	D, Length of Taper, at Bottom, Mm.	E, Outside Diameter at Bottom, Mm.
0.5	66 ± 2	6.0 ± 0.25	13 ± 1.0	30 ± 2	3.5 ± 0.5
1	69 ± 2	8.25 ± 0.25	13 ± 1.0	30 ± 2	3.5 ± 0.5
2	80 ± 2	10.75 ± 0.25*	13.5 ± 1.0	30 ± 2	4.0 ± 0.5
3	88 ± 2	10.75 ± 0.25*	13.5 ± 1.0	30 ± 2	4.0 ± 0.5
5	115 ± 2	13.0 ± 0.50	16.25 ± 0.75	40 ± 2	4.0 ± 0.5

Wall thickness of all sizes to be approximately 1 mm.

* The outside diameter of 2 and 3 ml. must not exceed 11.0 mm.; otherwise tubes will not fit into centrifuge shields.

Bottoms to be rounded

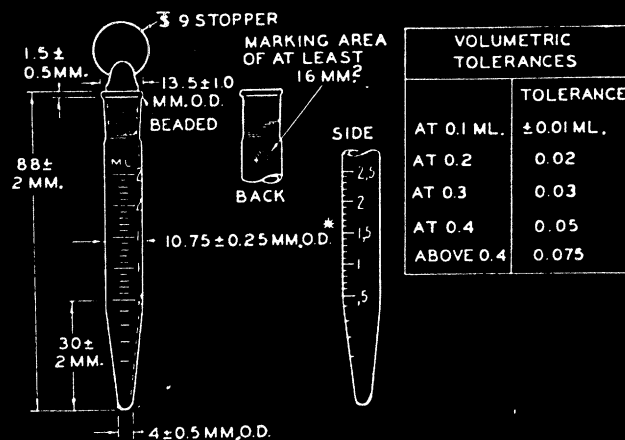


Figure 5. Microcentrifuge tube with conical bottom, stoppered, graduated, 2.5 ml. in 0.1 ml.

Wall thickness to be approximately 1 mm.

* Outside diameter must not exceed 11.0 mm.; otherwise, tube will not fit into centrifuge shields

Bottom to be rounded

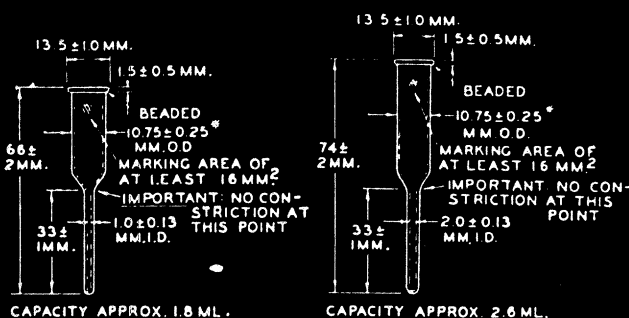


Figure 6. Microcentrifuge tube with cylindrical bottom, plain

Wall thickness of both sizes to be approximately 1 mm.

* The outside diameter of both sizes must not exceed 11.0 mm.; otherwise tubes will not fit into centrifuge shields

Bottoms to be rounded

4); with conical bottom, stoppered, graduated (Figure 5); and with cylindrical bottom, plain (1) (Figure 6). These centrifuge tubes fit into the metal shields that are supplied with commercially available centrifuges. Removal of glass stoppers during actual centrifugation is advised.

Additional reports will be made on other microvolumetric apparatus.

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